

REMARKS

Claim Rejections

All pending claims stand rejected. Claims 1-7, 15, 29, 30, 31-32, 35-36, 37 and 38 stand rejected under 35 USC §102(b) as anticipated by Okubo. The remaining claims stand rejected under 35 USC §103 citing Okubo in combination with other of the references.

Claim Amendments

Certain of the claims have been amended. This is to point out certain aspects in accordance with the present invention. Further, some claims have been canceled herewith, all without prejudice. Subject matter of canceled claims has been incorporated into other of the claims.

Some of the claims have been amended merely to improve their form, and this is the case unless the amendments herein are specifically pointed out below in support of patentability. All other amendments are improvements in form and/or to conform the claims to other of the amended claims, and are not intended for purposes of patentability or to narrow the claims.

Inventive Features

The claims as amended here are directed to three particular inventive features, all recited in the originally pending claims and which have been examined. It is believed that the Examiner perhaps did not fully appreciate the advantages and/or structure of these features and it is respectfully submitted that these features are indeed patentable over the cited references.

The first relevant feature is that of original Claim 7. Claim 7 was dependent upon Claim 4 in turn dependent upon Claim 1. The subject matter of Claim 7 and its attendant advantages are supported by the specification, paragraph 32 where the projection screen 105 (see FIGs. 1 and 2) defines an aperture 111 approximately in the horizontal middle of the projection screen. As stated in paragraph 32:

This results in some portion of the image projected on the projection screen 105 from the other conference room being displaced by

the body of the camera 110 and the aperture 111. . .to make the aperture 111 and the loss of this portion of the image less noticeable, the rooms 100 and their contents are configured so that this portion of the image contains a visually insignificant area. This may be done, for example, by placing an item or field 126 in each conference room at approximately the above described location, for example, such as a control panel 126 on a table 125. . .Such control panels 126a,b are present on the tables 125a,b in both conference rooms, as can be seen in FIG. 2. Whatever form the items 126 has, it preferably has dark rear coloration so as to make the aperture 111 (which itself will be dark) less noticeable. Because of the visually insignificant nature of the item 126, the participants do not notice the camera when looking at the image of the participants in the other conference room and facilitating the feeling of being in the same room, instead of being "on camera".

(This paragraph as quoted above conforms to the present version of same as amended here to correct obvious typographical errors in originally filed paragraph 32.)

This structure is best seen in the perspective view of FIG. 2 where the aperture 111 coincides with the control panel 126b on the table 125a. The other conference room may have an identical configuration. As pointed out above, the purpose is to hide the camera from the participants in each room so that they do not feel self-conscious about being on camera.

This is advantageously accomplished in accordance with the invention by placing a physical object such as the dark-colored control panel 126a, b in the room such as on the table 125 where the control panel's back side is imaged by the camera for that conference room and the image of same becomes part of the image transmitted to the second conference room. Since the object is typically dark or otherwise unobtrusive, when the image of the room with the control panel is projected on the display of the second room, this will effectively hide the camera aperture which is present in the screen of the second room. That is, the object is imaged by the camera in the first conference room and its image is projected on the display in the second conference room. In the second conference room the participants will see on their display a dark object (which is the back of the imaged control panel) and the fact that a portion of the image thereof is cut out for the local camera aperture (which is also dark) will not be apparent to them. Hence the physical object

present in the first conference room is used to hide the camera aperture in the other conference room.

In accordance with a second inventive aspect, the speakers are arranged so as to provide a maximum effect of the participants in the second room seemingly being in the first room. This is the subject matter of original Claim 11. It is recognized that video conference systems inherently have a speaker and microphones. An improvement is provided here as set forth in paragraph 33, approximate middle of the paragraph:

Preferably, at least one of the speakers 155 is located behind the projected screen 105, so that the voices of the participants in the other conference room appear to come from the proper direction and height; for example, the speaker may be placed at or about the height of where the head of a seated participant in the other room would appear on the display 105. Further, the other speakers 155 are preferably placed so as to be hidden from view from the conference room 100, such as behind acoustically transparent panels.

This advantageously heightens the audio aspect of the illusion of all conference participants being in the same room.

The third relevant feature is the lighting provided in each conference room, see original Claim 20, referring to the side indirect lighting, overhead indirect lighting, and lighting under the conference table. See paragraph 46, in pertinent part:

Generally, the overall approach to lighting the conference room is to provide a well lit environment in which all participants are identifiable, without making the participants feel that they are being intensely lit under "stage lights." . . . These aspects of the lighting design are achieved with a series of overhead lighting fixtures 120 arrayed on the ceiling of the room, a series of side panels 112 arrayed along the side wall of the room, and lighting under conference table 125.

This sophisticated lighting system advantageously provides a more realistic image for the participants in the other conference room by advantageously providing three dimensionality and depth reference.

Therefore the rejections of Claim 7, 11 and 20 are traversed. The Examiner examined all the original claims and rejected those reciting the subject matter pointed out above. However, it is respectfully requested that the Examiner perhaps has not fully considered the disclosures of the cited references and it is requested that he reconsider same in light of the following, which points out the inventiveness of this subject matter.

Camera Hiding Using Unobtrusive Object

The Examiner examined the subject matter of original Claim 7 directed to the visually insignificant area in the image corresponding to an image of an unobtrusive object located in another conference room. The Examiner rejected Claim 7 citing Okubo. In his rejection the Examiner at page 5 stated in pertinent part:

Regarding claims 2-7, 15, Okubo further teaches the following: camera is substantially hidden from the view of the participant in the conference room (figs. 8-9), . . . the large format display system has an aperture (5, figs. 8-9), the camera (1, figs. 8-9) located behind the aperture, aperture (5, figs. 8-9) is located at a height at or above eye level of the participants and at a horizontal position at or near horizontal middle of the large format display system, aperture (5, figs. 8-9) is located so as to coincide with visually insignificant area of the image of the other conference room as displayed on the large format display system visually insignificant area corresponds to an image of an unobtrusive object located in the other conference room, . . .

The above quoted analysis, it is respectfully submitted, is not technically correct as regards the “unobtrusive object”. It is understood that the Examiner is referring to the Okubo Patent Abstracts of Japan when referring to Okubo and the following also refers to same. (No English language translation of the remainder of Okubo is available.) Okubo Figure 8 is most relevant showing the camera 1, aperture 5, display screen 4, projector 8, and the participant 10 with the table sitting in front of him. The Okubo Patent Abstracts of Japan states:

For example, in case of TV conference, video signals transmitted from the council room of the partner are projected on screen 4 (4A, 4B) with excluding the part corresponding to hole 5 (5A, 5B) on projector 8

(8A, 8B) by blanking pulse formed blanking pulse generation circuit 9 (9A, 9B).

Therefore when the image picked up by Okubo's camera 1 is transmitted to the other conference room and projected onto the display in the other conference room, the portion of the image corresponding to hole (aperture) 5B is not projected on the other display 4A but instead a blanking pulse is provided there. Presumably the blanking pulse, as conventional in television, renders that portion of the image black. Thus in Okubo the projected image when projected onto the aperture of the display screen, rather than providing any light at that point, instead provides a black area. It is understood that the purpose is to hide the camera aperture in that screen from the participants in that room.

In that sense Okubo's goal – to hide the camera aperture in the screen – is the same as in accordance with the present invention. However, the present inventors arrived at a different, and it is believed superior, solution to this problem rather than merely providing local display electronic blanking. Instead, as pointed out above, in each conference room they provide an unobtrusive, preferably dark, object which is imaged by the camera in that room and is located so as to coincide with the camera aperture in the screen of the other room. When the image of the unobtrusive object is displayed onto the screen of the other room, not only is the camera aperture itself dark, because it is for instance backed up by dark material, additionally the area of the screen surrounding the aperture is also imaged dark because it is an image of the unobtrusive (preferably dark) object.

It is respectfully submitted that this is believed to be a superior solution over the Okubo screen blanking. It uses an unobtrusive object so that the participants in each room understand that when looking at that part of the screen they are not likely to see much, since in their room all they are looking at is a dark object. When looking at the image of the other room on their screen they see a similar dark object, the central portion of which is (although not particularly apparent to them) the camera aperture in their screen.

Hence while the overall goal here is similar to that of Okubo, the method of achieving same is different by instead of using display electronic blanking, using the object which has a

physical existence in each conference room. This provides a greater sense of reality than the electronic screen blanking approach of Okubo and hence is believed to be superior in terms of creating the illusion of all participants being in one large conference room with no cameras.

Thus the Claim 7 rejection is traversed. Claim 1 here is amended to include the language of original Claim 7, and also intervening Claims 4 and 6 upon which Claim 7 was dependent.

Hence it is respectfully submitted that present Claim 1 is allowable at least because it now recites “the aperture is located so as to coincide with the visually insignificant area of the image of the other conference room as displayed on the large format display, wherein the visually insignificant area corresponds to an image of an unobtrusive physical object located in the other conference room.” Note the addition of the word “physical” here not present in original Claim 7, but added to emphasize the nature, of for instance, the control panel where this is more than screen electronic blanking. Although the term “physical” does not appear in these exact words in the specification, it is respectfully submitted that it is well supported by the description in the specification of the “object” or “control panel”.

Hence it is respectfully submitted that Claim 1 as amended distinguishes over Okubo and is patentable, as are all claims dependent therefrom.

Speaker Location

As pointed out above, in accordance with the present invention, the location of the speakers is such for instance behind the display and at a particular height, so as to provide the greatest feeling of locally produced sound rather than sound merely transmitted from a remote location as recited in original Claim 11.

The Examiner rejected original Claim 11 (see Action page 11) citing Yoshida. The Examiner in rejecting original Claim 11 stated in pertinent part that Yoshida discloses:

...wherein one speaker (16 fig. 1) of the audio amplification system as located behind large format display system (reads on television receiver 12, fig. 1) at a height at or near the height of an image of a participant on the large format display system.

It is respectfully submitted that the Examiner perhaps did not fully analyze Yoshida in this respect, and it is respectfully submitted that original Claim 11 distinguishes thereover. Yoshida shows in his single figure the television receiver 12 in front of which are located the three speakers 16-1, 16-2 and 16-3. The microphones 15-1, etc. are located immediately in front of the speakers and the participants sit in chairs 14-1, 14-2 and 14-3. Thus, each participant has his own microphone and speaker but the speaker is immediately in front of him and of course well in front of the television receiver 12. Yoshida Patent Abstracts of Japan states in pertinent part:

For example, when a seat 24-1 of a television conference room 2 is image-picked-up by a television camera 21 and sent, it is projected in a position at the screen left side of a television receiver 12 of a television conference room 1. Consequently, when the voice channel of a microphone 25-1 of the conference room 2 is one-to-one-connected to a loudspeaker 16-3 of the conference room 1, a voice outputted from the loudspeaker 16-3 is made position-corresponding to the seat 24-1, and the ambience is given to the participants of seats 14-1 – 14-3.

Hence Yoshida is concerned with solving the general problem of making the ambience as realistic as possible to recognize the speaking person. However, it is clear that no sound is emitted from television receiver 12 and the only sound emitted is from the loudspeakers 16-1, etc. The loudspeakers are of course located in front, that is to the user's side, of the screen 12, not behind same. Moreover, that in Yoshida the television receiver 12 is rather small and certainly not expansive enough to fill a wall of a room or extend all the way across the conference table. In fact, it is clear that the endmost loudspeakers 16-1 and 16-3 in the Yoshida figure cannot be located "behind" the TV receiver since the TV receiver is too narrow, and putting the speakers to the side thereof would not give the desired feeling of realistic sound projection.

Hence not only does Yoshida not teach the subject matter of original Claim 11 directed to the speaker location, it is not seen why one would be motivated to modify Yoshida to meet Claim

11, given the Yoshida conference room configuration. Hence it is respectfully submitted the Examiner has perhaps not properly analyzed Yoshida and that original Claim 11, dependent upon Claim 10 and base Claim 1, clearly distinguishes thereover and so the Claim 11 rejection is traversed.

Present Claim 11 has been amended to be in independent form by including the language of base Claim 1 and part of intervening Claim 10. (However present Claim 11 does not include the subject matter of Claim 10 calling for “a plurality of microphones” and “a plurality of speakers.”) The final clause of Claim 11 has not been amended and recites as originally filed “at least one speaker of the audio amplification system is located behind the large format display system at a height at or near the height of an image of a participant on the large format display system.” As pointed out above, Yoshida does not show speakers being “behind” the display but instead in front of same. Moreover, Yoshida appears to be silent on the relative height of the speakers and hence also does not meet this aspect of Claim 11 which thereby additionally distinguishes over Yoshida.

Indirect Lighting

The third inventive aspect, the indirect lighting, is the subject matter of original Claim 20. In rejecting Claim 20, the Examiner cited Loughrey at page 13 of his Action, stating in pertinent part:

However, Loughrey discloses variable focus indirect lighting fixture which discloses the following: arranging lighting needs for a conference room depending upon the conference activity (col. 2 lines 17-28).

It is respectfully submitted that perhaps the Examiner has not fully considered Loughrey in making this rejection, which is also traversed. The Examiner cites Loughrey col. 2 which in pertinent part states, beginning line 24:

A typical solution for multiple levels of lighting focus is to use multiple differing light fixtures, e.g., recessed fluorescent lighting for a broader focus and incandescent directional lighting for narrow focus. Thus, there is a need in the art for a variable focus indirect lighting fixture.

It is not seen why this disclosure is particularly pertinent to the present claims. Loughrey teaches lighting as needed, including “indirect lighting”. The only actual disclosure of lighting a particular room is Loughrey FIG. 14 which shows the lighting fixtures 30a, 30b and 30c all located in the ceiling of the room. FIG. 14 is described in Loughrey at column 7 beginning line 24. Element 58 is a whiteboard, and element 60 is a wall display see column 7 line 42. Neither of these is a lighting fixture. Also as shown, there is no lighting underneath the table 56.

Therefore, while it is agreed that indirect lighting by itself is well known, that is about all that is relevant taught by Loughrey which fails to even suggest features recited in original Claim 20 (other than perhaps overhead indirect lighting fixtures) but which include the “plurality of side indirect lighting fixtures; . . . and a light source underneath the table” not shown in Loughrey or even suggested thereby. This lighting advantageously allows three dimensionality and depth reference by: (1) illumination of objects and participants with shadows and highlights giving a three dimensional effect thereby creating a more realistic picture for the camera; and (2) creating a visual

three dimensional reference, so the participants mentally (and unconsciously) combine both the local and remote (projected on the screen) conference rooms into one physical space (large room) due in part to the lighting. Hence original Claim 20 clearly distinguishes over Loughrey.

Claim 20 has been further amended for better clarity and to eliminate terms such as “conference” and “attached”. Additionally, Claim 20 has been put in independent form including the language of base Claim 1. Claim 20 therefore distinguishes over the references and is allowable.

Remaining Claims

The remaining original claims are amended to be directed to the three inventive aspects as set forth above. Taking these independent claim by independent claim, they are allowable for at least the following reasons:

Claim 29 has been amended to include the camera location of original Claims 4, 6 and 7 and hence is allowable for at least the same reasons as similarly amended Claim 1.

Claim 30 has been amended to include the speaker location of original Claim 11 and includes the language of original Claim 11 plus (part of) intervening Claims 9 and 10, similar to now independent Claim 11, and hence is allowable for at least the same reasons as pointed above for Claim 11.

Claim 31 has been amended to include the language of original Claim 20 directed to the lighting fixture arrangement and hence is allowable for at least the same reasons pointed out above for Claim 20.

Claims 35-38 have been canceled.

Claim 39 has been amended to include the language of original Claim 7 and intermediate Claims 6 and 4, similar to independent Claim 1, and hence is allowable for at least the same reasons as pointed out above for Claim 1.

Method Claim 41 has been amended here to include the indirect lighting of original Claim 20 and hence is allowable for at least the same reasons as pointed above for Claim 20.

New Claims

New Claim 43 is an independent method claim essentially the same as original Claim 41 in combination with the subject matter of the speaker location of original Claim 11 and intermediate Claims 9 and 10 (except for only requiring a single speaker and microphone), and hence is allowable for at least the same reasons as pointed out above for Claim 11.

New Claim 44 is dependent on Claim 1 and recites further subject matter of the camera hiding using the object, and is supported by, e.g., paragraph 32. Since Okubo has no such “physical object”, clearly Okubo does not meet or even suggest Claim 44. Further, Claim 44 additionally distinguishes Okubo by reciting “wherein a surface of the physical object facing the camera has a dark coloration and the view transmitted from the other conference room shows a physical object of a dark coloration.” This use of dark colored objects in each room to hide the cameras also is not shown or suggested in Okubo.

New Claim 45 is directed to acoustic aspects of the system as set forth at the end of paragraph 33:

The rooms are further configured to have a reverberation time, frequency response, and other acoustic characteristics that approximate the response of a larger, single conference room. . .as if they were being made in a single room with about twice the actual physical volume, thereby further reinforcing the perception of a shared physical space.

None of the original claims recited this feature, which is not believed to be shown in any references cited by the Examiner, hence Claim 45 distinguishes thereover.

New dependent Claim 46 (and similar Claims 47 and 48) is directed to the lighting and is supported by e.g., paragraph 49 referring to the “Rope lighting along the underside of the edges of the table. . .” No such feature is shown in the references cited by the Examiner. Hence each of new Claims 46-48 is additionally allowable.

New independent Claim 49 is directed to an additional feature of the system, as set forth in paragraph 48:

The side panels 112 are arrayed along the right and left side walls. Side panels 112a near the back of the room. . .provide diffuse side and back lighting. Side panels 112b are to the side of the conference table 125 and provide diffuse lighting of the sides of the participants and their faces. Side panels 112c near the front of the room. . .provide diffuse frontal lighting of the participants. FIGS. 11a and 11b illustrate cross-sectional views of side panels 112a, 112b, showing the boxes 1214 having lights 1212 recessed into the sides of boxes. . .

Hence this advantageously provides a three-dimensional lighting effect. Additionally, the side panels 112c (front of room) are imaged onto the display in the other room, and when viewed by the participants in the other room blend in with the side panels 112c in the other room, enhancing the illusion of all participants being in one room. No such use of illuminated side panels is shown in any of the references.

Hence new Claim 49, in reciting the three sets (front, alongside the table, and rear) of illuminated panels distinguishes over the references.

Hence all pending claims are allowable and allowance thereof is requested. If the Examiner contemplates other action he is requested to contact the undersigned.

Power of Attorney

A new Power of Attorney is being submitted in this case separately. Responsibility has been transferred to the undersigned. Hence note the new docket number on this paper, as supported by the enclosed Application Data Sheet.

Information Disclosure Statement

An Information Disclosure Statement has been submitted herewith. This is supplemental to the earlier filed Information Disclosure Statement in this case. The attention of the Examiner is drawn to the three Allen et al. references cited in the present IDS. It is believed that these are cumulative to Allen et al. U.S. 5,571,337 of record here cited by the Examiner and which was itself cumulative to Allen et al. U.S. 5,572,248 earlier cited in the Information Disclosure Statement earlier filed by Applicant.

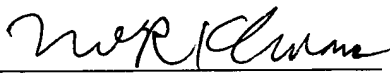
CONCLUSION

In view of the above, all presently pending claims in this application are believed to be in immediate condition for allowance. Accordingly the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing (new) docket no. 590282001500.

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Respectfully submitted,

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